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23 NORTHERN DISTRICT OF CALIFORNIA  
24  
25 SAN FRANCISCO DIVISION

26 ORACLE AMERICA, INC.,  
27 Plaintiffs,  
28 v.  
29 GOOGLE INC.,  
30 Defendant.

31 Case No. 3:10-cv-03561 WHA (DMR)

32 CORRECTED EXHIBIT F TO  
33 DECLARATION OF EDWARD A. BAYLEY  
34 IN SUPPORT OF GOOGLE INC.'S  
35 MOTIONS IN LIMINE NOS. 1-6.  
36 PART 2 OF 5

37 Hearing: April 27, 2016  
38 Dept. Courtroom 8, 19<sup>th</sup> Fl.  
39 Judge: Hon. William Alsup



**Figure 14**  
**Penetration Rates of Mobile Data Services by Country**

**Table 17: Mobile Data Penetration in the United States and Europe**

	U.S.	EU	France	Germany	Italy	Spain	UK
(percent of total mobile subscribers)							
Watched video	6.0	9.2	7.3	6.2	11.2	12.8	9.4
Listened to music	7.4	17.9	16.1	17.6	14.7	22.5	19.9
Accessed news/info via browser	13.7	9.5	10.1	5.7	7.8	7.2	16.3
Received SMS ads	19.2	49.6	63.5	29.7	53.9	73.0	35.4
Played downloaded game	9.0	8.3	4.4	7.3	9.0	11.4	10.3
Accessed downloaded application	4.9	2.9	1.8	2.6	4.1	2.5	3.4
Sent/received photos or videos	23.0	27.6	25.0	20.9	32.0	31.0	30.2
Purchased ringtones	9.2	3.8	4.1	3.6	4.0	4.1	3.2
Used e-mail	12.6	8.6	6.5	7.2	11.2	9.1	9.1
Accessed social networking sites	4.8	2.8	2.4	1.3	2.7	2.5	4.9

Source M:Metrics.

88. According to the FCC, as of January 2009, mobile Internet penetration is higher in the U.S. (15.6 percent of wireless subscribers) than in Western European countries such as the United Kingdom (12.9 percent), Italy (11.9 percent), France (9.6 percent) and Germany (7.4 percent).<sup>171</sup>

#### 7.2.4 Growth in Popularity of Mobile Games and Entertainment Applications

89. During the relevant time period, the popularity of mobile games and entertainment applications also grew in the U.S. Telephia estimated that the number of mobile game buyers in the U.S. grew to 5 million in March 2006, or approximately 2.4 percent of mobile subscribers, a 44 percent increase from nearly 3.5 million in January 2006. At about that same time, Cingular reported that more than 7.5 million of its subscribers, or 14 percent of the total, browse the Internet monthly.<sup>172</sup>

90. During 2005 and 2006, entertainment applications such as ringtones and games also grew rapidly in popularity. Telephia estimated that U.S. wireless consumers downloaded more than 8.2 million games in March 2006, up 53 percent from nearly 5.4 million games in January 2006. Performance rights firm BMI estimated that U.S. retail sales of mobile phone ringtones grew to \$500 million in calendar year 2005, up from \$245 million in 2004 and \$68 million in 2003. At

<sup>171</sup> FCC 09-54, Annual Report and Analysis of Competitive Market Conditions with Respect to Commercial Mobile Services, Thirteenth Report, January 16, 2009, p. 107.

<sup>172</sup> FCC 06-142, Annual Report and Analysis of Competitive Market Conditions with Respect to Commercial Mobile Services, Eleventh Report, September 29, 2006, p. 73.



that time, BMI expected additional music-based revenues to come from the newly launched over-the-air music downloading services. For example, since its launch at the end of October 2005, Sprint Music Store's number of over-the-air song downloads passed the two million mark in April 2006, after hitting one million downloads in February 2006.<sup>173</sup>

### 7.3 Smartphone Annual Unit Sales and Connections

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91. The development of faster wireless broadband technologies as well as the development of data-related applications by independent application developers, OEMs, and owners of mobile operating systems has driven worldwide demand for smartphones.
92. **Exhibit 10** is a summary of estimated annual worldwide smartphone unit sales by vendor<sup>174</sup> for the period 2003 through 2015. As **Exhibit 10** illustrates, during this time period, an estimated 5.5 billion smartphones were sold worldwide. As of the year ending December 2008, an estimated total of 318.1 million smartphones had been sold worldwide. Three years later (by December 2011), the total had increased nearly 300 percent<sup>175</sup> to 1.26 billion. By the end of 2015, total cumulative smartphone sales since 2003 had increased to 5.52 billion.
93. As reflected in **Exhibits 10** and **11**, during the early to mid-2000s, the worldwide market for mobile devices was dominated by products designed primarily for business use, such as Research in Motion's ("RIM") BlackBerry device, and the Palm One device. As **Exhibit 10** illustrates, from 2003 to 2011, RIM sold an estimated total 177.8 million BlackBerry devices.
94. **Exhibit 11** is a summary of estimated annual smartphone unit sales by operating system. During the period 2009 through 2015, 3.6 billion Android-operated smartphones were sold worldwide, distributed among various OEMs such as Samsung, Motorola, and LG Electronics, as well as OEMs included in the "Other" line item.
95. In addition to demand for smartphones, the development of faster wireless broadband technologies and data-related applications also drove increased worldwide demand for wireless-enabled laptops, tablets and modem connections. **Exhibit 9** is a summary of annual Android tablet unit sales for the period 2010 through 2015. According to Gartner, annual worldwide Android tablet sales increased from 2.8 million in 2010 to 53.3 million in 2012, and to 154.7 million in 2014. It is estimated that by the end of 2015, 489.6 million Android tablets would have been sold worldwide since 2010.
96. The annual increase in demand for smartphones and tablets is reflected in the number of total smartphones connected to carrier networks in the U.S. **Figure 15** below is a summary of the

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<sup>173</sup> FCC 06-142, Annual Report and Analysis of Competitive Market Conditions with Respect to Commercial Mobile Services, Eleventh Report, September 29, 2006, pp. 75 - 76.

<sup>174</sup> Sometimes referred to as "OEMs."

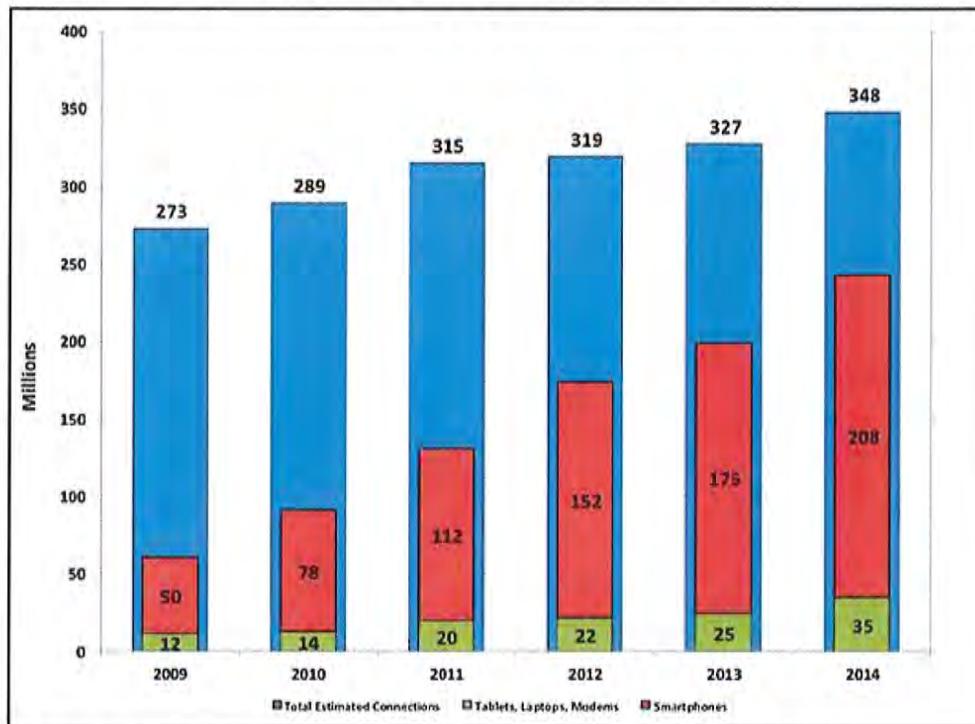
<sup>175</sup> (Cumulative Units as of 2011 – Cumulative Units as of 2008)/Cumulative Units as of 2008 = (\$1.26 B - \$318 M)/\$318 M = 296%



estimated number of total wireless connections, smartphone connections, and wireless-enabled laptops, tablets and modem connections for the years 2009 to 2014. As **Figure 15** illustrates, annual estimated smartphone connections in the U.S. increased from 50 million as of 2009 to 208 million as of 2014.

**Figure 15**

**U.S. Estimated Wireless Connections, Smartphones, and Wireless-Enabled Laptops, Tablets and Modems<sup>176</sup>**



#### **7.4 Mobile Operating System Worldwide Unit Sales and Market Share**

97. Mobile platform developers compete within the mobile wireless ecosystem. **Figure 16** below is a summary of worldwide annual smartphone market shares by platform for the period 2003 through 2015.

<sup>176</sup> CTIA's Wireless Industry Indices – Annual Wireless Survey Results: A Comprehensive Report from CTIA Analyzing the U.S. Wireless Industry – Year-End 2014 Results, CTIA-The Wireless Association, Sept. 2015, p. 10.



**Figure 16**  
**Worldwide Smartphone Market Share by Platform**

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	Total
Windows CE	37.7%	43.0%	47.9%	56.1%	12.0%	11.8%	8.7%	4.2%	2.1%	2.5%	3.2%	2.8%	2.1%	37%
Palm OS	50.0%	36.3%	19.8%	11.7%	1.4%	1.8%	-	-	-	-	-	-	-	0.4%
RIM	-	-	21.3%	19.8%	9.6%	16.0%	19.9%	16.0%	10.9%	5.0%	1.9%	0.6%	0.3%	43%
Symbian	-	-	6.7%	5.4%	63.5%	52.4%	46.9%	37.6%	18.7%	-	-	-	-	7.8%
iPhone	-	-	-	-	2.7%	8.2%	14.4%	15.3%	18.9%	19.1%	15.5%	15.4%	14.6%	15.4%
Android	-	-	-	-	-	-	3.9%	22.7%	46.4%	56.4%	78.5%	80.7%	82.7%	65.9%
Other	12.3%	20.7%	4.3%	7.1%	10.7%	9.2%	6.1%	3.8%	3.0%	6.9%	0.9%	0.5%	0.3%	2.4%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

98. According to the FCC, during the 2002 to 2004 time period, most smartphones and PDAs utilized one of two major platforms: Palm Inc.'s PalmOS or Microsoft's Pocket PC. In addition to producing approximately 50 percent of all PDAs sold, Palm also licensed its PalmOS operating system to other handheld device and mobile telephone handset manufacturers, including Handspring, Sony, Samsung, and Kyocera. According to the FCC, "[o]ne of the major sources of demand for PalmOS products [was] the multitude of software and applications developed by third-party companies that [could] be downloaded on to PalmOS devices at little or no additional expense." During the 2002 to 2004 time period, the second major PDA platform, Pocket PC, was "similar to Microsoft Windows and all Pocket PC devices included handheld versions of most of the Microsoft Office desktop software applications."<sup>177</sup>

99. According to Gartner, in 2003, Windows CE accounted for 37.7 percent of the worldwide PDA OS [operating system] market. In 2004, Windows CE became the No. 1 PDA platform when it accounted for 43.0 percent of platform shipments. Palm slipped from 50.0 percent market share in 2003, to 36.3 percent in 2004.<sup>178</sup> **Exhibit 11** is a summary of worldwide smartphone unit sales by platform. As **Exhibit 11** illustrates, 206.2 million smartphones running the Windows CE platform were sold from 2003 through 2015 and 19.5 million smartphones running the Palm platform were sold during the years 2003 through 2008.<sup>179</sup>

100. Also according to Gartner, the RIM and Symbian platforms gained market share in 2005. In fact, the RIM platform achieved its highest share of the worldwide smartphone market at 21.3 percent in 2005. Since 2009 (when it was 19.9 percent), RIM's market share has declined steadily while the Symbian platform worldwide market share peaked at 63.5 percent in 2007, and declined to 18.7 percent by 2011.<sup>180</sup> As **Exhibit 11** illustrates, 240.1 million smartphones

<sup>177</sup> FCC 03-150, Annual Report and Analysis of Competitive Market Conditions with Respect to Commercial Mobile Services, Eighth Report, July 14, 2003, pp. 76 - 77.

<sup>178</sup> Gartner: Worldwide PDA Shipments Grew 7% in 2004, Gartner Press Release, February 15, 2005.

<sup>179</sup> Exhibit 11.

<sup>180</sup> Exhibit 11.



running the RIM platform were sold from 2005 through 2015 and 433.4 million smartphones running the Symbian platform were sold during the years 2005 through 2011.<sup>181</sup>

101. Apple introduced the iPhone in 2007 and since 2009 the consumer oriented iOS platform has maintained a worldwide market share of 14.4 percent to 19.1 percent.<sup>182</sup> As reflected in **Exhibit 11**, according to Gartner, from 2007 through 2015, Apple sold 848.2 million iPhones.<sup>183</sup>
102. Since the introduction of Android in November 2008, the Android platform has consistently captured an increasing share of the worldwide smartphone market. Android's annual worldwide market share increased from 3.9 percent in 2009 to 82.7 percent in 2015.<sup>184</sup> As reflected in **Exhibit 11**, from 2009 through 2015, 3.64 billion smartphones running the Android platform have been sold worldwide.<sup>185</sup>

#### **7.5 Apple Introduces the iPhone/iPad in January 2007**

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103. Apple introduced the iPhone in January 2007. It was first offered for sale by AT&T in June 2007 and was "locked" to the AT&T wireless network—meaning that iPhones worked only on that network. The iPhone combined the communication function of a cellphone with the music and video features of an iPod and a web-browser that made it easy for users to browse and navigate the entire Internet.<sup>186</sup> According to the FCC, "the 2007 launch of the iPhone and 2008 launch of the iPhone 3G catalyzed the development of a new type of device in the mobile wireless ecosystem."<sup>187</sup>
104. Apple's iPhone introduction represented a fundamental departure from AT&T's walled garden business model as, before the introduction of the iPhone, the wireless carrier controlled which software was initially placed on phones activated for its network, especially feature phones. Abandoning its usual insistence that the phone come installed with its proprietary software for accessing mobile content, AT&T agreed to offer the iPhone to consumers without AT&T's own web surfing and entertainment service and its own line of games and ringtones. In addition, the

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<sup>181</sup> Exhibit 11.

<sup>182</sup> Exhibit 11.

<sup>183</sup> Exhibit 11.

<sup>184</sup> Exhibit 11.

<sup>185</sup> Exhibit 11.

<sup>186</sup> FCC 08-28, Annual Report and Analysis of Competitive Market Conditions with Respect to Commercial Mobile Services, Twelfth Report, February 4, 2008, p. 8; <http://www.engadget.com/2010/05/10/confirmed-apple-and-atandt-signed-five-year-iphone-exclusivity-de/>.

<sup>187</sup> FCC 10-81, Annual Report and Analysis of Competitive Market Conditions with Respect to Commercial Mobile Services, Fourteenth Report, May 20, 2010, p. 79.



web browser on the iPhone allowed users to browse web sites that previously did not display properly on cellphones.<sup>188</sup>

105. Initially, Apple kept tight control over the types of applications and services consumers could access on the iPhone. For example, Morgan Stanley observed that “Apple has itself created a walled garden on the iPhone in terms of branding and applications.”<sup>189</sup> In particular, Apple initially adopted a restrictive policy limiting independent software that could be used on the iPhone. This policy was greeted with heavy criticism from independent programmers, who complained that Apple was “stymieing innovation” by trying to exert excessive control over the device. On October 17, 2007, Apple reversed its policy by announcing that in February 2008 the company would release a software development kit to allow programmers to develop third-party applications for the iPhone.<sup>190</sup>

106. In July 2008, Apple introduced the 3G iPhone that ran on AT&T’s WCDMA/HSDPA network. This allowed users to navigate the Internet at much faster speeds than the original iPhone launched in June 2007. At the same time, Apple opened the App Store as an online software clearinghouse that sold third-party Apps and content developed for the iPhone using a software development kit released by Apple.<sup>191</sup>

107. According to Apple, there were about 900 applications available on the App Store as of August 2008, and 20 percent of these could be downloaded free of charge.<sup>192</sup> In the first month that the App Store was open, users downloaded more than 60 million programs for the iPhone. Apple’s then Chief Executive Steve Jobs predicted that the mobile phone of the future “will be differentiated by software.”<sup>193</sup>

108. According to the FCC, there were over 100,000 applications available from the Apple App Store as of December 2009. The number of applications downloaded from Apple’s App Store grew to

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<sup>188</sup> FCC 08-28, Annual Report and Analysis of Competitive Market Conditions with Respect to Commercial Mobile Services, Twelfth Report, February 4, 2008, p. 81.

<sup>189</sup> FCC 08-28, Annual Report and Analysis of Competitive Market Conditions with Respect to Commercial Mobile Services, Twelfth Report, February 4, 2008, p. 81.

<sup>190</sup> FCC 08-28, Annual Report and Analysis of Competitive Market Conditions with Respect to Commercial Mobile Services, Twelfth Report, February 4, 2008, p. 81; <http://www.wsj.com/articles/SB119263585523362090>.

<sup>191</sup> FCC 09-54, Annual Report and Analysis of Competitive Market Conditions with Respect to Commercial Mobile Services, Thirteenth Report, January 16, 2009, p. 9.

<sup>192</sup> Apple keeps 30 percent of the proceeds from sales of iPhone applications for which customers pay to download, while developers receive the remaining 70 percent (see, FCC 09-54, Annual Report and Analysis of Competitive Market Conditions with Respect to Commercial Mobile Services, Thirteenth Report, January 16, 2009, p. 82).

<sup>193</sup> FCC 09-54, Annual Report and Analysis of Competitive Market Conditions with Respect to Commercial Mobile Services, Thirteenth Report, January 16, 2009, p. 82.



over 2 billion in 2009.<sup>194</sup> By March 2012, 25 billion applications had been downloaded from the Apple App Store.<sup>195</sup>

109. Data from M:Metrics for the month of January 2008 indicated that U.S. consumers who purchased the iPhone browsed the Internet and otherwise accessed mobile content at much higher rates than those who owned other makes of smartphones as well as U.S. mobile phone subscribers in general. **Figure 17** is a summary of U.S. mobile content consumption via iPhones, other smartphones, and for the total market for January 2008.

**Figure 17**

**Percentage of Wireless Subscribers Accessing the Internet by Smartphone in 2008<sup>196</sup>**

Activity	iPhone	Smartphone	Market
Any news or info via browser	84.8%	58.2%	13.1%
Accessed web search	58.6%	37.0%	6.1%
Watched mobile TV and/or video	30.9%	14.2%	4.6%
Watched on-demand video or TV programming	20.9%	7.0%	1.4%
Accessed social networking site or blog	49.7%	19.4%	4.2%
Accessed Facebook	20.0%	NA	1.5%
Accessed YouTube	30.4%	NA	1.0%
Used Google Maps	36.0%	NA	2.6%
Listened to music on mobile device	74.1%	27.9%	6.7%

110. As reflected in **Figure 17** above, as of January 2008, nearly 85 percent of iPhone users accessed news and information via a browser, as compared to about 58.2 percent of other smartphone users and compared to the market average of 13.1 percent. As **Figure 17** illustrates, M:Metrics found that nearly 31 percent of iPhone users watched mobile TV or video, versus a market average of 4.6 percent and more than double the rate for all Smartphone users (14.2 percent). In addition, nearly 50 percent of iPhone users accessed a social networking site or blog, versus 19.4 percent of Smartphone users and a 4.2 percent market average.<sup>197</sup>

## 8. GOOGLE'S MOBILE BUSINESS STRATEGY

<sup>194</sup> FCC 10-81, Annual Report and Analysis of Competitive Market Conditions with Respect to Commercial Mobile Services, Fourteenth Report, May 20, 2010, p. 173.

<sup>195</sup> FCC 13-34, Annual Report and Analysis of Competitive Market Conditions with Respect to Commercial Mobile Services, Sixteenth Report, March 21, 2013, p. 24.

<sup>196</sup> FCC 09-54, Annual Report and Analysis of Competitive Market Conditions with Respect to Commercial Mobile Services, Thirteenth Report, January 16, 2009, p. 98.

<sup>197</sup> FCC 09-54, Annual Report and Analysis of Competitive Market Conditions with Respect to Commercial Mobile Services, Thirteenth Report, January 16, 2009, p. 98.



111. From at least the early 2000s, Google was concerned with the emergence and growth of the mobile wireless industry as a competitive threat for its search services, which had dominated the desktop market. Google worried about its ability to attract people who browse the Internet on mobile devices to its websites, and to protect the substantial annual advertising revenues it had achieved through Internet searches by people searching the Internet via personal computers.

112. One of Google's earliest mobile strategy documents was created in late 2004 when it evaluated opportunities to distribute its search services and applications on wireless devices.<sup>198</sup> That late 2004 wireless strategy report did not mention development of its own platform, and barely mentioned the prospect of creating its own handset.

113. According to another Google October 2004 "Wireless Strategy" report, "[t]he market is changing . . . Mobile Data Service is growing rapidly . . . Consumer Behavior has changed . . .

- Cell Phone becomes integral part of people's life-style . . .
- There are more mobile users than Internet users in some regions . . .
- SMS, and Application Download becomes standard: In the first five months of 2004, Verizon Wireless downloaded 34 MM applications to its 40 million subscribers.<sup>200</sup>

114. Google was so concerned that it might be locked-out of the search services industry by wireless carriers such as Verizon and AT&T, or by mobile platform owners such as Apple, that its public securities filings began reflecting this risk to its business. In its 2004 10-K (which was filed on March 30, 2005), Google noted:

*"More individuals are using non-PC devices to access the Internet, and versions of our web search technology developed for these devices may not be widely adopted by users of these devices. The number of people who access the Internet through devices other than personal computers, including mobile telephones, handheld calendaring and email assistants, and television set-top devices, has increased dramatically in the past few years. The lower resolution, functionality and memory associated with alternative devices make the use of our products and services through such devices difficult. If we are unable to attract and retain a substantial number of alternative device users to our web search services or if we are slow to develop products and technologies that are more compatible with non-PC communications devices, we will fail to capture a significant share of an increasingly important portion of the market for online services."*<sup>200</sup>

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<sup>198</sup> GOOG-00580439.

<sup>199</sup> GOOGLE-87-00005644 – 697 at 546.

<sup>200</sup> Google Inc. SEC Form 10-K for the year ended December 31, 2004, pp. 57-58.



115. Google's top executives became concerned with the prospect of exclusion of its services from mobile devices.<sup>201</sup> In addition to the wireless carriers and OEMs, Google entered into agreements with Apple, RIM and other owners of mobile operating systems to have Internet traffic directed to Google websites.

116. It was imperative that Google ensure high customer adoption for its search services on iOS devices.<sup>202</sup> I believe that the terms of Google's search-distribution agreement(s) with Apple, and information regarding the total amounts paid by Google to Apple pursuant to that agreement(s) will provide significant evidence of the high value that Google placed on becoming the default search provider on mobile devices, which would further support my opinion that there is a causal link between mobile platform control and mobile advertising revenues for Google. I requested that Oracle's counsel obtain these documents and information through the discovery process, but Google has not produced responsive material. I continue to believe that such documents and information are relevant to my analysis, and I will review any responsive materials produced by Apple.<sup>203</sup>

117. Apple has always had many options available, such as Yahoo! Search, Microsoft Bing and others, and Google has long been afraid that it would be "pushed out" by Apple as the default search provider on iOS devices.<sup>204</sup> In order to ensure that did not happen, Google was, and continues to be, willing to concede a significant amount of money to secure its position as the default search provider on iOS devices. Press reports reveal that over time Google has paid billions of dollars to Apple.<sup>205</sup> It was reported in 2013 that Google paid Apple 75 cents of every one dollar of search advertising it earned via an iOS device.<sup>206</sup>

118. [REDACTED]

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<sup>201</sup> Deposition of Larry Page, August 24, 2011, pp. 77 – 78; Deposition of Urs Holzle, November 24, 2015, pp. 297 – 298.

<sup>202</sup> GOOG-00100518-523, at 519.

<sup>203</sup> I am aware that Oracle has a pending motion to compel production of Google's search-distribution agreements with Apple and other third parties. In addition to refusing to produce documents regarding such agreements, I understand that Google has also refused to testify regarding these agreements during a properly noticed Rule 30(b)(6) deposition.

<sup>204</sup> GOOG-00227828-835, at 835; GOOG-00231147-168, at 148; GOOGLE-26-00005905-912 at 906..

<sup>205</sup> "Financial Analyst Affirms Google's \$1 Billion in 'Default Search' Payments to Apple," Greg Stirling, February 11, 2013, <http://searcgengineland.com/financial-analyst-affirms-googles-1-billion-in-default-search-payments-to-apple-148255>.

<sup>206</sup> "How Much Money Apple Makes From Google For Every iOS Device it Sells," Jay Yarow, February 10, 2013, <http://www.businessinsider.com/how-muc-money-apple-makes-from-goolge-for-every-ios-device-it-sells-2013-2>.

<sup>207</sup> Deposition of Jonathan Gold, December 11, 2015, pp. 14 – 16.



INTELLECTUAL CAPITAL EQUIITY

[REDACTED]

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119. A 96-page Google wireless strategy report dated October 26, 2004 devoted a third of a page to the “idea” of a Google handset.<sup>212</sup> By early 2005, however, Google was considering a suitable acquisition. In December 2004 or January 2005, there was a meeting between Google President Larry Page and Android Founder Andy Rubin.<sup>213</sup> By March, Google was considering an investment in, or acquisition of, Android or another mobile software provider.<sup>214</sup> By April, the Executive Management Group of Google undertook a deal review to acquire Android.<sup>215</sup> Around that same time, reports indicate that a high-level Apple engineer began working on the iPhone in late 2004, and that Apple greenlighted the product in early 2005.<sup>216</sup>

120. After acquiring Android in June 2005, Google exerted intense pressure on the Android team to move rapidly to introduce a mobile platform.<sup>217</sup> Android was segregated from the rest of the company as a “skunkworks.”<sup>218</sup> There was a drumbeat of news in 2005 and 2006 regarding the increasing migration to mobile devices and the increasingly intense nature of usage of those devices. Google viewed Yahoo! and Microsoft as its principal competitors worldwide.<sup>219</sup> Additionally, Google was also concerned with Facebook.<sup>220</sup> Notably, Mr. Rubin also testified that he “was under incredible schedule pressure...”<sup>221</sup> Google recognized that it faced a critical window of opportunity.

121. An October 2008 Frost & Sullivan Market Insight report highlighted the importance of Google’s entrance into the mobile industry, stating:<sup>222</sup>

<sup>208</sup> Plaintiff’s Deposition Exhibit 5063 – GOOG-00100518-523 at 519.

<sup>209</sup> Deposition of Jonathan Gold, December 11, 2015, p. 17.

<sup>210</sup> Deposition of Jonathan Gold, December 11, 2015, pp. 149 - 151.

<sup>211</sup> See Deposition of Urs Hoelze, November 24, 2015, pp. 300-301.

<sup>212</sup> GOOG 00580439-534 at 463.

<sup>213</sup> GOOGLE-26-00025077; [www.businessinsider.com/how-android-was-created-2015-3](http://www.businessinsider.com/how-android-was-created-2015-3).

<sup>214</sup> GOOGLE-26-00025071.

<sup>215</sup> GOOGLE-58-00048925.

<sup>216</sup> Apple Engineer Recalls the iPhone’s Birth, *Wall Street Journal*, March 25, 2014.

<sup>217</sup> Eric Schmidt Trial Testimony, April 24, 2013 at 1458.

<sup>218</sup> Deposition of Urs Holze, November 24, 2015, pp. 56 – 57.

<sup>219</sup> GOOGLE-01-00024675-716 at 711-12; GOOGLE-26-00005904-912 at 906, 911; GOOGLE-26-00006666 – 690; GOOG-00577366-445.

<sup>220</sup> GOOGLE-26-00006162 – 6169, at 6163; GOOGLE-26-00006275 – 299 at 283-289.

<sup>221</sup> Deposition of Andrew Rubin, July 27, 2011, p. 179.

<sup>222</sup> Google ‘Opens’ a New Front in the Mobile Platform Wars, *Frost & Sullivan Market Insight*, October 23, 2008.



*"Google management has declared that mobile is critically important to the future of the company. Again, the numbers explain why: Google monetizes search on approximately 200 million desktop PCs and Macs. Since there are close to two billion phones sold each year, Google has an opportunity to monetize search in a market that is 10 times greater than their current market. They will continue to promote their cross platform resources such as mobile search and maps. But, Google contends that Android is important to lead the charge in providing a truly open mobile Internet experience that approximates the desktop Internet experience."<sup>223</sup>*

A Google internal document from 2008 agreed: "Mobile search is *the* key market; it is the primary reason for other companies to partner with us, and it has already been demonstrated to be highly profitable in advanced markets"<sup>224</sup>

122. In August of 2010, Mr. Schmidt commented that Google was increasing traction in its mobile business, stating that display ads were fast proving themselves to be Google's next \$10 billion opportunity.<sup>225</sup> Mr. Schmidt further commented on the success of Google's mobile business as follows:

*"The opportunity in mobile is so large it's breathtaking – our mobile business more than doubled in the last year. The mobile phone is the defining, iconic product in our space." ... "You start calculating what that will be in a year ... and it looks to me as though Android is well past escape velocity at every level."<sup>226</sup>*

Escape velocity was apparently no guarantee of success, however. Later that year, speaking to a "Mobile Summit" of Google personnel, then-President of Mobile and Platforms Henrique de Castro declared, "If we miss the 'mobile window', we'll be out of business in 10 years."<sup>227</sup>

123. As seen in the following **Figure 18** taken from an Operating Committee Quarterly Review dated July 12, 2010, Google implemented a four-phase strategy for Android. Each of the four general phases was broken down into several, more specific, strategic objectives. Notably, the first strategic objective of the first phase of the overall strategy explicitly mentions the use of a "Leading Software Platform" (e.g. Java) to build an "Ecosystem." Moreover, in addition to relying on Java in connection with accomplishing the first phase of its strategy, as discussed in the sections that follow, I note that Google's marketplace actions have consistently supported the implementation of the overall strategy reflected below.

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<sup>223</sup> Google 'Opens' a New Front in the Mobile Platform Wars, *Frost & Sullivan Market Insight*, October 23, 2008.

<sup>224</sup> GOOGLE-00360213 – 259 at 244.

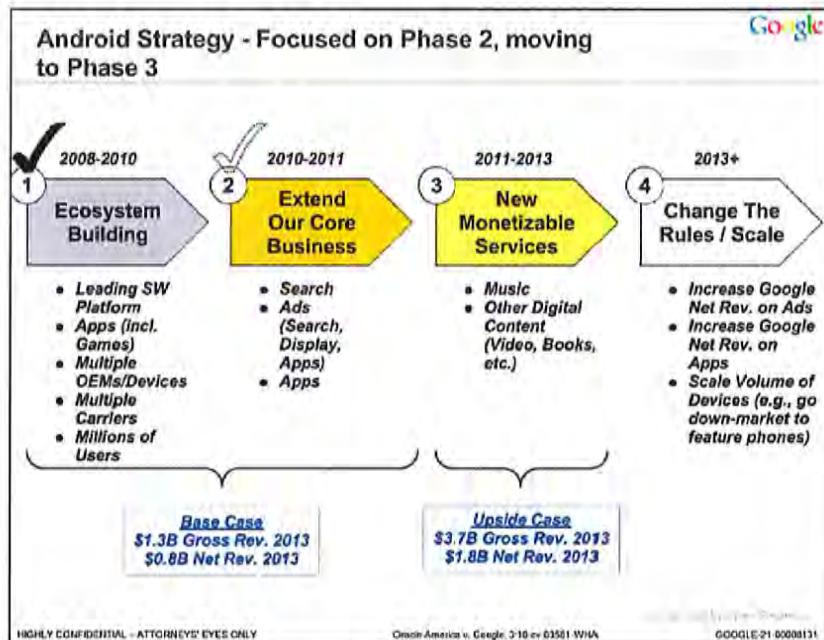
<sup>225</sup> GOOGLE-26-00025769 – 772 at 769-770.

<sup>226</sup> GOOGLE-26-00025769 -772 at 770.

<sup>227</sup> GOOGLE-23-00000049 – 057 at 049.



Figure 18  
Overview of Google's Mobile Strategy<sup>228</sup>



## 8.1 Google Uses Java to Develop the Android Platform

124. The first part of Google's mobile strategy was to develop the Android platform.

### 8.1.1 Google's Acquisition of Android Inc.

125. The Android platform addressed, in part, Google's concern with attracting mobile Internet traffic to its websites and not getting "locked out" of the market for mobile Internet search and advertising.<sup>229</sup> In October 2005, Mr. Rubin reported that "Android exists to make sure folks can't block access to Google; it ensures that users have equal access to services from their phone."<sup>230</sup> A June 2009 Android strategy-related record echoed this theme. According to a Google business record, Android's "strategic value" was tied to ensuring Google was not locked out of the mobile market for Internet browsing.<sup>231</sup> According to a Google business record, Google's ultimate goal for Android was to use it to "make the world's information accessible and

<sup>228</sup> Trial Exhibit 1061 – GOOGLE-21-00008116-139 at 131.

<sup>229</sup> Trial Exhibit 0363 – GOOGLE-22-00060006-044 at 016; Deposition of Brian Swetland, July 7, 2011, p. 54; Deposition of Urs Holzle, November 24, 2015, p. 296.

<sup>230</sup> Email exchange regarding Mobile Strategy 2006 – Meeting Notes, October 24, 2015, GOOGLE-01-00056184 – 187 at 187.

<sup>231</sup> Android Strategy and Partnerships Overview, June 2009, GOOGLE-22-00171914 – 951 at 923.



useful on 3.1 billion mobile phones.<sup>232</sup> Mr. Page acknowledged in his deposition that Android “was very important to the success of Google as a whole,”<sup>233</sup> which was consistent with the view of CEO Eric Schmidt that Android’s success with consumers would “overcome our shortcomings.”<sup>234</sup>

126. As noted, Google faced a critical window. The Android Stock Purchase Agreement was executed in June 2005, and by that year:

- The U.S. wireless penetration rate was already 70.0 percent.<sup>235</sup> And the U.S. penetration rate was well below that of other countries such as Hong Kong (106 percent), The United Kingdom (113 percent), Italy (123 percent), Spain (108 percent), and Finland (101 percent).
- Carriers were deploying networks based on CDMA2000 1xEV-DO and WCDMA/HSDPA technologies that provided mobile Internet access at speeds comparable to what many users got from fixed broadband connections such as DSL.<sup>236</sup> For example, in early 2005, Verizon Wireless introduced 3G handsets that could access Verizon’s EV-DO network and launched VCAST, the first wireless multimedia service in the U.S. to be provided over the next-generation network using EV-DO technology.<sup>237</sup>
- High-speed Internet-access connections using mobile wireless technology increased to 21.9 million connections as of December 31, 2006.<sup>238</sup>
- Sun counted more than 4.5 million Java developers, 2.5 billion Java-enabled devices, and 1 billion Java technology-enabled smart cards. The market research firm Ovum estimates that 708 million Java-enabled handsets were circulating by June 2005.<sup>239</sup>
- Mobile data usage reached approximately 50 percent of U.S. mobile subscribers in the

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<sup>232</sup> Focus Area Narrative: Special Projects – Android, Q1 2008, GOOGLE-01-00048156 – 163 at 156.

<sup>233</sup> Deposition of Larry Page, August 24, 2011, p. 83.

<sup>234</sup> GOOGLE-26-00031558 – 559.

<sup>235</sup> FCC 06-142, Annual Report and Analysis of Competitive Market Conditions with Respect to Commercial Mobile Services, Eleventh Report, September 29, 2006, p. 107.

<sup>236</sup> FCC 06-142, Annual Report and Analysis of Competitive Market Conditions with Respect to Commercial Mobile Services, Eleventh Report, September 29, 2006, p. 93.

<sup>237</sup> FCC 05-173, Annual Report and Analysis of Competitive Market Conditions with Respect to Commercial Mobile Services, Tenth Report, September 30, 2005, pp. 53 – 54.

<sup>238</sup> FCC 08-28, Annual Report and Analysis of Competitive Market Conditions with Respect to Commercial Mobile Services, Twelfth Report, February 4, 2008, p. 96.

<sup>239</sup> Java Timeline, 1995 – 2015, available at <http://oracle.com.edgesuite.net/timeline/java>.



fourth quarter of 2005, up from 43 percent in the first quarter of 2005.<sup>240</sup> According to Telephia, 22 percent of these mobile subscribers paid to access the web via their wireless device.<sup>241</sup>

- BMI estimated that U.S. retail sales of mobile phone ringtones grew to \$500 million in calendar year 2005, up from \$245 million in 2004 and \$68 million in 2003.<sup>242</sup>

127. An April 2005 Google presentation recommended that Google “acquire Android with an aggressive milestone earn-out component”<sup>243</sup> in an attempt to get a product to market as quickly as possible. On June 30, 2005, Google and Android entered into a Stock Purchase Agreement (“the Android Stock Purchase Agreement”) whereby Google acquired all of Android, Inc.’s stock for a Closing Purchase Price of \$11 million.<sup>244</sup> The agreement provided for milestone payments of \$8 million, \$10 million, \$15 million, and \$27 million, each to be paid upon achieving specified milestones relating to the unit sales of devices that utilize the Android platform.<sup>245</sup> These milestone payments thus provided Android Inc. principals with substantial incentives to bring a commercially acceptable mobile operating system to market quickly.

#### 8.1.2 Google Negotiates with Sun

128. Soon after its acquisition of Android Inc., Google began discussing the possibility of taking a Java license from Sun.<sup>246</sup> Google discussed the possibility of licensing Sun’s technology as early as July 28, 2005, with Google describing its intent to create an internally developed Java Virtual Machine for use in its handset operating system (Project Armstrong). “As part of its wireless strategy, Google wishes to release the entire project, including the JVM, as Open Source to promote adoption of Google services on handsets by carriers and OEMs.”<sup>247</sup>

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<sup>240</sup> FCC 06-142, Annual Report and Analysis of Competitive Market Conditions with Respect to Commercial Mobile Services, Eleventh Report, September 29, 2006, p. 72.

<sup>241</sup> FCC 06-142, Annual Report and Analysis of Competitive Market Conditions with Respect to Commercial Mobile Services, Eleventh Report, September 29, 2006, p. 72.

<sup>242</sup> FCC 06-142, Annual Report and Analysis of Competitive Market Conditions with Respect to Commercial Mobile Services, Eleventh Report, September 29, 2006, pp. 75 - 76.

<sup>243</sup> Android, EMG M&A Review, April 18, 2005, GOOGLE-58-00048925 – 931 at 926.

<sup>244</sup> Stock Purchase Agreement by and Among Google, Inc. and Android, Inc., June 30, 2005, GOOGLE-00303922 – 4003 at 928 – 929.

<sup>245</sup> Stock Purchase Agreement by and Among Google, Inc. and Android, Inc., June 30, 2005, GOOGLE-00303922 – 4003 at 3930 and 4000.

<sup>246</sup> CLDC licensing discussions with Sun, July 28, 2005, GOOGLE-12-00000473 – 476 at 474.

<sup>247</sup> CLDC licensing discussions with Sun, July 28, 2005, GOOGLE-12-00000473 – GOOGLE-12-00000476 at GOOGLE-12-00000473. I note that the strategy outlined by Google included the following: 1) Google would like to work with Sun to conceive of and agree to a license that enables Google to release to the Open Source Community its internally developed CLDC based JVM. Google wished to achieve this goal with Sun’s blessing and cooperation. 2) Google does not foresee the necessity to license or redistribute any software from Sun; 3) Google desires to be able to call the resulting work Java; 4) Google needs a TCK license; 5) Google proposed that the



129. These licensing discussions continued into 2006, until ultimately Google and Sun were unable to reach an agreement.<sup>248</sup> According to Mr. Rubin, there were two main issues that kept Google and Sun from reaching an agreement – control of the ecosystem and control of the security model.<sup>249</sup> Mr. Rubin testified that “[t]hird-party developers contribute to the success of a platform by having their companies invest in the platform by basing their businesses on the platform. It was [Google’s] intention to create an independent third-party developer ecosystem, and one of the terms [Google and Sun] couldn’t agree on was Sun’s desire to own the third-party developer ecosystem.”<sup>250</sup> Google also wanted the security model to be uncontrolled, similar to the ecosystem, which Google believed was a key principle of an open platform, but Sun also wanted to control the security mechanism of the platform.<sup>251</sup>

#### 8.1.3 Android’s Use of the Copyrighted Works.

130. Its inability to obtain a license from Sun did not deter Google from using the 37 Java APIs copied from the Java Platform. As described in the Reports of Messrs. Zeidman, Kemerer and Schmidt, the 37 Java APIs were incorporated into the Android Platform. Much like the API packages in the Java platform, I understand the API packages in the Android platform are used by developers to facilitate the development of programs and apps that run on the Android platform.

##### *Google Open-Sources Android*

131. Android was developed through the Open Handset Alliance, a group of more than 30 technology and mobile companies.<sup>252</sup> Google’s decision to open-source the Android platform was another way in which Google reduced the time it took to get Android to market. Google first publicly disclosed the development of the Android platform in 2007. At that time, Google described Android as “an open-source and free mobile software platform which allows developers to create applications for mobile devices.”<sup>253</sup> Open source meant Google could not be locked out of the platform.

132. Early on, Google recognized the importance of attracting independent software developers to the Android platform. Google needed software developers to create Apps for the Android

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Android product would pass the TCK on reference design before release to open source community, and that OEM licensees would pass TCK again on shipping product 6) OEM pays standard Java royalty to be negotiated by OEM and Sun.

<sup>248</sup> Email from Jonathan Schwartz to Eric Schmidt, Scott McNealy and Sergey Brin Regarding Java/Linux Mobile Platform, April 27, 2006, GOOGLE-66-00000274; Deposition of Andy Rubin, April 5, 2011, p. 28.

<sup>249</sup> Deposition of Andy Rubin, April 5, 2011, pp. 24-26.

<sup>250</sup> Deposition of Andy Rubin, April 5, 2011, pp. 24-25.

<sup>251</sup> Deposition of Andy Rubin, April 5, 2011, pp. 24-25.

<sup>252</sup> Google, Inc. SEC Form 10-K for the year ended December 31, 2007, p. 6.

<sup>253</sup> Google, Inc. SEC Form 10-K for the year ended December 31, 2007, p. 6.



Market, another critical part of Google's Android strategy.<sup>254</sup> In order for Android Market to compete with the iPhone App Store, Google needed a large number of Apps to be available through Android Market/Google Play. Google incentivized independent software developers by matching the revenue sharing terms provided by Apple. (i.e., 70 percent of revenue to developers).<sup>255</sup> By 2005, Google estimated there were more than 4.5 million Java developers. According to Mr. Rubin:

*So I think pretty consistently throughout the development of Android we referred – we really wanted to enable the third-party developer ecosystem in a way where the developers were using tools that they were familiar with. I didn't want to go invent some new thing that developers had to go to school to learn how to program; right, and as I mentioned earlier, a lot of college course work teach the Java programming language. So Java as the programming language is really, really important to our solution because developers can just jump on it without learning something new and, in fact, going back to college. So I think that given the importance of ecosystems in the era of smart phones and app stores and everything else, that the Java programming language was really, really important to us.<sup>256</sup>*

- 133. In a strategy memo dated October 2007, Mr. Eric Schmidt, Chairman of Google's Executive Board, describes the two parts to Google's mobile strategy, one of which is Android, saying the strategy is to "change the nature of the entire industry with Android. Through deep partnerships with carriers, ODMs, and developers we hope to enable an open ecosystem for the mobile world and create a standard, open software platform for Java-based mobile software."<sup>257</sup>
- 134. Initially, in 2009, Android appeared on only one phone and one carrier—HTC and T-Mobile and Google was in need of a strong network of carrier and OEM partners. Google used revenue sharing as one means of achieving its goal. Google shared with carriers and handset makers both application revenue and advertising revenue.

#### ***The Android Platform is Released to the Market***

- 135. The development of Android was announced in November 2007 by the Open Handset Alliance – an alliance of handset makers, wireless providers and other technology companies led by Google, T-Mobile, High Tech Computer Corporation, Qualcomm, and Motorola – which was formed to accelerate innovation and "openness" in the provision of mobile wireless services.<sup>258</sup>

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<sup>254</sup> Android Market Setup for Partner Rev-Share, PSO Android Team, GOOGLE-00302808 – 811.

<sup>255</sup> Android Market Setup for Partner Rev-Share, PSO Android Team, GOOGLE-00302808 – 811.

<sup>256</sup> Deposition of Mr. Andy Rubin, July 27, 2011, pp. 122 – 123.

<sup>257</sup> Email regarding Eric 2008 Strategy Memo, October 3, 2007, GOOGLE-26-00006035 – 042 at 038.

<sup>258</sup> FCC DA 09-54, Annual Report and Analysis of Competitive Market Conditions with Respect to Commercial Mobile Services, Thirteenth Report, January 16, 2009, p. 83.



136. The first Android phone, the T-Mobile G1, was released on October 22, 2008.<sup>259</sup> By 2008 the wireless industry had progressed significantly from where it was in 2005. For example, by 2008:

- U.S. mobile phone users were spending an average of four hours and 38 minutes per month browsing the mobile web in the United States.<sup>260</sup> As of May 2008, M:Metrics estimated that mobile browsing had increased 89 percent year over year among smartphone users in the U.S., and that page views had increased 27 percent.<sup>261</sup>
- ComScore, Inc.<sup>262</sup> estimated that 28.4 percent of U.S. mobile subscribers had 3G devices in mid-2008.<sup>263</sup> This compares with an average of 28.3 percent of mobile subscribers in the five largest West European countries (Germany, Spain, France, Italy and the United Kingdom).<sup>264</sup>
- U.S. led among 16 countries in mobile Internet penetration with 15.6 percent of wireless subscribers, followed by, among others, the United Kingdom, (12.9 percent), Italy (11.9 percent), Spain (10.8 percent), France (9.6 percent), and Germany (7.4 percent).<sup>265</sup>
- As **Exhibit 10** indicates, as of the year ending December 2008, an estimated total of 318.1 million smartphones had been sold worldwide.
- Apple had already introduced the iPhone (in January 2007). In July 2008, Apple introduced the 3G iPhone that ran on AT&T's WCDMA/HSDPA network.<sup>266</sup>

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<sup>259</sup> T-Mobile Unveils the T-Mobile G1 – the First Phone Powered by Android, <http://www.t-mobile.com/news/t-mobile-unveils-the-t-mobile-g1-the-first-phone-powered-by-android.htm>.

<sup>260</sup> FCC DA 09-54, Annual Report and Analysis of Competitive Market Conditions with Respect to Commercial Mobile Services, Thirteenth Report, January 16, 2009, p. 100. The estimate is based on on-device metering of actual user behavior of those with Windows, Symbian and Palm handsets in March 2008.

<sup>261</sup> FCC DA 09-54, Annual Report and Analysis of Competitive Market Conditions with Respect to Commercial Mobile Services, Thirteenth Report, January 16, 2009, pp. 100 – 101.

<sup>262</sup> comScore, Inc. is a global media measurement and analytics company that makes audiences and advertising more valuable across all screens that matter. According to comScore, it helps media buyers and sellers understand and make decisions based on how consumers use different media, such as TV, video, mobile, desktop and more. <http://ir.comscore.com/releasedetail.cfm?ReleaseID=944439>

<sup>263</sup> FCC DA 09-54, Annual Report and Analysis of Competitive Market Conditions with Respect to Commercial Mobile Services, Thirteenth Report, January 16, 2009, p. 107.

<sup>264</sup> FCC DA 09-54, Annual Report and Analysis of Competitive Market Conditions with Respect to Commercial Mobile Services, Thirteenth Report, January 16, 2009, p. 107.

<sup>265</sup> FCC DA 09-54, Annual Report and Analysis of Competitive Market Conditions with Respect to Commercial Mobile Services, Thirteenth Report, January 16, 2009, p. 107.

<sup>266</sup> FCC DA 09-54, Annual Report and Analysis of Competitive Market Conditions with Respect to Commercial Mobile Services, Thirteenth Report, January 16, 2009, p. 9.



- At the same time, Apple opened the App Store.<sup>267</sup> According to Apple, there were about 900 applications available on the App Store as of August 2008, and 20 percent of these could be downloaded free of charge.<sup>268</sup>

137. As stated previously and shown in **Figure 17**, as of January 2008, nearly 85 percent of iPhone users accessed news and information via a browser, as compared to about 58.2 percent of other smartphone users and compared to the market average of 13.1 percent.

138. Despite being late to the mobile wireless market, in an email to Google employees in November 2008, Google stated that Android was one of the core areas at the heart of Google's strategy and had the "potential to be a 'game changing' event for the mobile industry and Google."<sup>269</sup>

139. Mobile industry participants such as OEMs and wireless carriers appreciated the potential "game changing" nature of the Android platform. According to the FCC, as of 2008, "three of the four nationwide providers [had] expressed interest in offering mobile handsets that use an operating system called Android, which [was] being designed to facilitate access to third-party content providers."<sup>270</sup>

140. According to the FCC, Google's business model differed fundamentally from that of rivals such as Apple and other industry players. The FCC reported in January 2009 that analysts "stress that Google will lose money on Android as an operating system, since . . . Google is giving the Android software away free to wireless service providers and handset makers." According to the FCC, as of January 2009, Google "hope[d] to earn revenue from advertising, just as it now does on the PC-based Internet . . . the mobile search advertising market is a promising source of ad revenue."<sup>271</sup>

141. During Google's Q3 2010 Earnings Call, Mr. Schmidt described Android as "probably the largest single platform play available in the market today, because it's a platform for computation for location, for everything that you could do with the new and most popular set of computing devices that are emerging. That market is larger than the PC market, and the Tablet market is a small component of it, but an important part of it. So if you think as Mobile as platform as

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<sup>267</sup> FCC DA 09-54, Annual Report and Analysis of Competitive Market Conditions with Respect to Commercial Mobile Services, Thirteenth Report, January 16, 2009, p. 9.

<sup>268</sup> Apple keeps 30 percent of the proceeds from sales of iPhone applications for which customers pay to download, while developers receive the remaining 70 percent (see, FCC DA 09-54, Annual Report and Analysis of Competitive Market Conditions with Respect to Commercial Mobile Services, Thirteenth Report, January 16, 2009, p. 82).

<sup>269</sup> Email regarding [Googlers] Highlights from the 2009 Planning Process, November 19, 2008, GOOGLE-17-00738457 – 460 at 457 – 458.

<sup>270</sup> FCC DA 09-54, Annual Report and Analysis of Competitive Market Conditions with Respect to Commercial Mobile Services, Thirteenth Report, January 16, 2009, p. 82.

<sup>271</sup> FCC DA 09-54, Annual Report and Analysis of Competitive Market Conditions with Respect to Commercial Mobile Services, Thirteenth Report, January 16, 2009, pp. 85 - 86.



phone plus Tablet plus all the other things, we hope to become the leading platform in that space, and we are doing it with open source approach.”<sup>272</sup>

142. In 2010, reflecting upon Google offering the Android platform for free, Google noted that achieving a “\$1 billion run rate in Mobile, is testament to the fact that, now we have a revenue model . . . and that revenue model sort of proves to us that, roughly the revenues are split between our search efforts, our display efforts and our application efforts. We are able to play across all those three spaces with our mobile monetization efforts, and the more people who use smartphones, the more people who are able to access (throughout) on their devices, the more we see the trend that people are going to search in them, they’re going to give us opportunities to put display advertising on them. So, we see no reason to change our monetization model. We think the current approach to Android drives more users and more [] usage and drives the Ecosystem.”<sup>273</sup>

143. By 2011, Google had entered Phase 3 of its 4-Phase plan, and was “on track to be on a \$1B (that’s \$1,000,000,000 or one thousand million dollars) run rate by end of 2011. But we’re just getting started.”<sup>274</sup>

144. As of May 2015, Google reported there were over 400 manufacturers and more than 500 carriers selling Android devices.<sup>275</sup> Also, as of October 2015, there are 1.4 billion users of Android devices.<sup>276</sup> **Figure 19** below is a Google summary of the evolution of the Android platform from its initial sale in October 2008 to October 2011.

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<sup>272</sup> Google Inc. Q3 2010 Earnings Call Transcript,  
<http://www.morningstar.com/earnings/printtranscript.aspx?id=18282869>.

<sup>273</sup> Google Inc. Q3 2010 Earnings Call Transcript,  
<http://www.morningstar.com/earnings/printtranscript.aspx?id=18282869>.

<sup>274</sup> GOOG-00273854 – 874 at 873.

<sup>275</sup> You say you want a mobile revolution..., Google Blog, May 28, 2015,  
<https://googleblog.blogspot.com/2015/05/io-2015-mobile-revolution.html>.

<sup>276</sup> Alphabet (GOOG) Q3 2015 Results – Earnings Call Transcript, October 22, 2015,  
<http://seekingalpha.com/article/3596706-alphabet-goog-q3-2015-results-earnings-call-transcript>.



Figure 19

Evolution of the Android Platform<sup>277</sup>

## 8.1.4 Google Introduces the Nexus Line of Smartphones

145. In January 2010, Google began selling its own version of an Android-based smartphone, the Nexus One, directly to consumers.<sup>278</sup> During a keynote speech at the 2010 Mobile World Congress, Mr. Schmidt discussed the idea of “Mobile First,” stating: “We understand that the new rule is mobile first...Mobile first in everything. Mobile first in terms of applications...And it means...that we have a role now to inform, to educate through all these devices.’ Google programmers now want to do work on mobile first, before the desktop.”<sup>279</sup>

## 8.1.5 Google Develops the Android Market (Now Known as “Google Play”)

146. From Google’s perspective, the Android platform was designed to support several different objectives. First, Android supported and brought together in one package a number of applications Google developed for mobile handsets, including the Google Search service, Google maps, and an advanced mobile Web browser intended to rival the browser on the Apple iPhone.

147. Second, Android provided a platform to support a marketplace for Apps made by other companies. Like Apple’s software development kit and App store, Android was designed to make it easier for third-party software developers to make their Apps available on mobile

<sup>277</sup> GOOG-00275390 – 410 at 406.

<sup>278</sup> FCC 10-81, Annual Report and Analysis of Competitive Market Conditions with Respect to Mobile Wireless, Including Commercial Mobile Services, Fourteenth Report, May 20, 2010, p. 83.

<sup>279</sup> Google’s New Rule: Mobile First, February 16, 2010, <http://www.pc当地.com/article2/0,2817,2359752,00.asp>.



handsets and to integrate these Apps with handset features such as location-sensing technology.<sup>280</sup> The Android Market provided the following benefits to Google:<sup>281</sup>

- It ensured an open App ecosystem without the traditional barriers to entry or distribution, maximizing the return on investment for developers;
- It was a carrot for handset manufacturers to be Android-compatible, and
- It helped ensure Google got their Apps out to mobile users.<sup>282</sup>

148. In order to help increase the number of Apps available through the Android Market, Google introduced an Android Developer Challenge that provided \$10 million in rewards.<sup>283</sup> This investment accomplished the goal of adding more apps to the Android Market, which can be seen in a slight decrease in the number of Apps after the Developer Challenge was discontinued, as reflected in **Figure 20**.<sup>284</sup>

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<sup>280</sup> FCC DA 09-54, Annual Report and Analysis of Competitive Market Conditions with Respect to Commercial Mobile Services, Thirteenth Report, January 16, 2009, pp. 83 - 84.

<sup>281</sup> Android Market Setup for Partner Rev-Share, PSO Android Team, GOOGLE-00302808 – 811.

<sup>282</sup> Android Market Setup for Partner Rev-Share, PSO Android Team, GOOGLE-00302808 – 811.

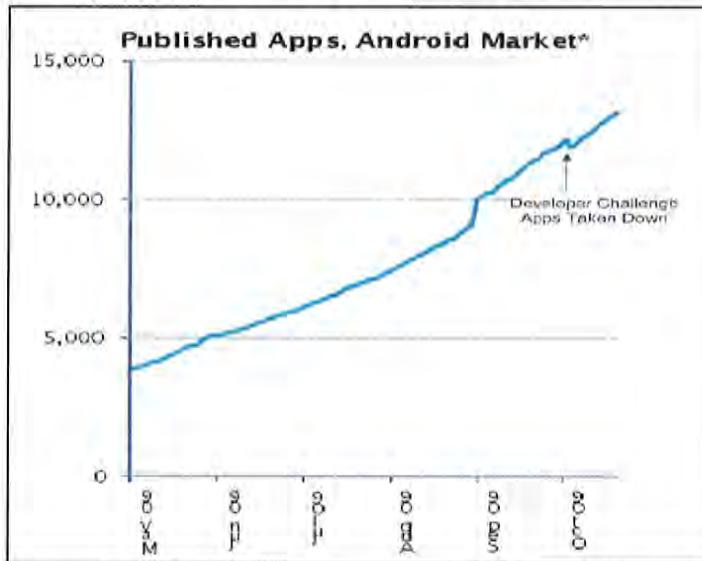
<sup>283</sup> Android Strategy and Partnerships Overview, June 2009, GOOGLE-22-00171914 – 951 at 949.

<sup>284</sup> Android OC Quarterly Review – Q3/Q4, GOOGLE-00303867 – 884 at 874.



Figure 20

## Published Apps in Android Market



149. As of December 2009, the “Android Market had 15,000 [available Apps].” Google reported 40 million downloads in 14 months (November 2008 through December 2009), as compared to Apple App Store’s 100,000 applications and over 2 billion downloads in 17 months.<sup>285</sup>

150. According to the FCC, “Android is made available free of charge to handset manufacturers and wireless service providers, and is available on multiple devices and multiple service providers. Android is also an open source platform; the launch of applications and content by third-party developers through the Android Market application store requires no approval by either Google or the wireless service provider.”<sup>286</sup>

## 8.2 Google Establishes Distribution Partnerships

151. As noted above, in the early 2000s Google was concerned as search activity was migrating to mobile devices and the companies who controlled those devices had the power to exclude Google’s services.<sup>287</sup>

<sup>285</sup> FCC 10-81, Annual Report and Analysis of Competitive Market Conditions with Respect to Mobile Wireless, Including Commercial Mobile Services, Fourteenth Report, May 20, 2010, p. 83.

<sup>286</sup> FCC 10-81, Annual Report and Analysis of Competitive Market Conditions with Respect to Mobile Wireless, Including Commercial Mobile Services, Fourteenth Report, May 20, 2010, p. 83.

<sup>287</sup> GOOGLE-01-00056184 – 187; Google, Inc. SEC Form 10-K for the year ended December 31, 2004, pp. 57-58; Google, Inc. SEC Form 10-K for the year ended December 31 2005, p. 32.



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152. To address this concern, Google entered into various agreements with wireless carriers and OEMs within the U.S. and abroad. For example, in 2009, the FCC reported: “*that Sprint Nextel recently entered into a deal with Google under which Sprint Nextel added Google as the default Web search bar on browsers in more than 40 of its handsets, and as part of that deal Sprint Nextel shares revenue from ads Google displays in response to searches.*”<sup>288</sup>
153. By 2013, Google had entered into at least fifty different agreements whereby Google shared Search/Ad Revenue and/or Google Play revenue with wireless carriers and OEMs located in the United States, Japan, Korea, and Google’s Europe-Middle-East-Africa regions.<sup>289</sup> **Figure 21** below reflects the names of Google’s wireless carrier Distribution Partners and the total amounts Google paid to each of them in 2013 and 2014.

**Figure 21<sup>290</sup>**

**Google Payments to Wireless Carrier Distribution Partners**



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<sup>288</sup> FCC DA 09-54, Annual Report and Analysis of Competitive Market Conditions with Respect to Commercial Mobile Services, Thirteenth Report, January 16, 2009, p. 65; GOOGLE-22-00113654.

<sup>289</sup> GOOG-00130338-386 at 362; Plaintiff’s Deposition Exhibit 5091.

<sup>290</sup> GOOG-00130338-386 at 362; Plaintiff’s Deposition Exhibit 5091.



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154.

<sup>291</sup> GOOGLE-03169550-603 at 576. The term of the agreement ended on December 31, 2011. GOOGLE-03169550-603 at 550.

<sup>292</sup> GOOG-00130338-386 at 362; GOOGLE-03169604-616 at 604; GOOGLE-01-00131959-962

<sup>293</sup> GOOG-10000176-203 at 176.

<sup>294</sup> GOOG-10000164-168; GOOG-10000153-163 at 153.

<sup>295</sup> GOOG-10000176-203 at 186 and 196; GOOG-10000153, GOOG-10000164, GOOG-10000169

<sup>296</sup> GOOGLE-22-00071003-051 at 003.

<sup>297</sup> GOOGLE-22-00071003-051 at 038; GOOGLE-00-00000268-288 at 280; GOOGLE-22-00520449-462 at 454.

<sup>298</sup> GOOGLE-30-00036599-611.

<sup>299</sup> Deposition of Rachel Claflin dated April 26, 2011, pp. 80-81.

<sup>300</sup> See GOOGLE-00393489-610.



INTELLECTUAL CAPITAL EQUITY

[REDACTED]

155. As Google prepared to launch Android, it needed to build its ecosystem. This required it to enter into a deal with a wireless carrier, and an OEM that would manufacture the first Android device. [REDACTED]

[REDACTED]

156. [REDACTED]

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<sup>301</sup> GOOGLE-00393489-610 at 491, 492, 496.

<sup>302</sup> GOOGLE-00393489-610 at 496.

<sup>303</sup> GOOGLE-00393414-445 at 416.

<sup>304</sup> GOOGLE-00-00000289-348 at 289.

<sup>305</sup> GOOGLE-00-00000289-348 at 325.

<sup>306</sup> GOOGLE-00396160-177 at 160 and 164.

<sup>307</sup> GOOGLE-00396160-177 at 175.

<sup>308</sup> GOOGLE-00396160-177 at 176.

<sup>309</sup> GOOGLE-00396178-206.

<sup>310</sup> GOOGLE-00396178-206 at 180-181.



157. T-Mobile was only the fourth most popular wireless carrier in the United States.<sup>311</sup> In order to continue the expansion of its ecosystem, Google had to secure an agreement with a more popular wireless carrier. AT&T had the greatest number of subscribers at that time period and an exclusive contract with Apple to sell the iPhone.<sup>312</sup> That left Google to woo Verizon, the wireless carrier with the second largest subscriber base.<sup>313</sup> [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

158. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

159. This method of distribution shows that Google and its business partners believe there was a connection between the Android platform and the advertising revenue. I understand Google has continued to enter into other revenue-sharing agreements with carriers and OEMs.

### 8.3 Current and Anticipated Android Devices and Uses

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#### 8.3.1 Android Mobile Phones

160. The Android platform was developed to operate mobile devices such as mobile phones and tablets. As reflected in **Exhibit 9**, according to Gartner, since the first Android handheld device was offered for sale in 2009, 3.6 Billion Android smartphones have been sold worldwide by

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<sup>311</sup> Will Park, *Top Ten US Wireless Carriers*, IntoMobile, <http://www.intomobile.com/2008/08/20/top-ten-us-wireless-carriers/> (Aug. 20, 2008).

<sup>312</sup> Will Park, *Top Ten US Wireless Carriers*, IntoMobile, <http://www.intomobile.com/2008/08/20/top-ten-us-wireless-carriers/> (Aug. 20, 2008); <http://www.engadget.com/2010/05/10/confirmed-apple-and-atandt-signed-five-year-iphone-exclusivity-de/>.

<sup>313</sup> Will Park, *Top Ten US Wireless Carriers*, IntoMobile, <http://www.intomobile.com/2008/08/20/top-ten-us-wireless-carriers/> (Aug. 20, 2008).

<sup>314</sup> GOOGLE-03169550-603.

<sup>315</sup> GOOGLE-03169550-603 at 576. The term of the agreement ended on December 31, 2011. GOOGLE-03169550-603 at 550.

<sup>316</sup> GOOGLE-03169550-603 at 561.

<sup>317</sup> GOOGLE-03169604-616 at 605 and 611.

<sup>318</sup> GOOGLE-03169604-616 at 609.



various manufacturers such as HTC, Samsung, LG and others. Thus, Google had met milestone one and phase one of its 4-phase mobile strategy.

161. In January 2010, Google introduced the Nexus One mobile phone manufactured by HTC.<sup>319</sup> In an attempt to change the way consumers purchase smartphones, Google sold the phone online with no carrier or manufacturer customizations. In December 2010, Google released the Nexus S manufactured by Samsung with a larger 4 inch screen and more storage.<sup>320</sup> Samsung stated it sold 512,000 Nexus S phones from Q2-2011 to Q2-2012.<sup>321</sup> Since the Nexus S, Google has released the following Nexus smartphones:

- Galaxy Nexus (Samsung) – October 2011
- Nexus 4 (LG) – October 2012
- Nexus 5 (LG) – October 2013<sup>322</sup>
- Nexus 6 (Motorola) – October 2014<sup>323</sup>
- Nexus X5 (LG) & 6P (Huawei) – October 2015<sup>324</sup>

162. In September 2014, Google announced the launch of its Android One platform to target the low-end mobile phone market in emerging markets.<sup>325</sup> Thus, at this time Google was focused on executing phase four of its 4-phase mobile strategy. The initial launch included phones available in India, with plans to expand to Indonesia, the Philippines, Bangladesh, Nepal, Pakistan and Sri Lanka shortly thereafter.<sup>326</sup> Google initially offered for sale three mobile phones manufactured by Micromax, Spice and Karbonn, each priced at around \$100.<sup>327</sup> Despite the use of lower cost components, Android One devices run the same version of the Android platform that higher end mobile phones run.<sup>328</sup>

163. By May 2015, Android One was launched in seven countries – India, Bangladesh, Nepal, Sri Lanka, Indonesia, the Philippines, and Turkey – with eleven OEMs and 612,000 devices activated.<sup>329</sup> [REDACTED]

<sup>319</sup> <http://www.androidauthority.com/history-nexus-smartphone-line-536352/>.

<sup>320</sup> <http://www.androidauthority.com/history-nexus-smartphone-line-536352/>.

<sup>321</sup> <http://www.androidauthority.com/history-nexus-smartphone-line-536352/>.

<sup>322</sup> <http://www.androidauthority.com/history-nexus-smartphone-line-536352/>.

<sup>323</sup> <http://www.motorola-blog.blogspot.com/2014/10/nexus-6-from-google-and-motorola-more.html>

<sup>324</sup> <http://www.gizmag.com/nexus-6p-vs-nexus-5x-comparison/39699/>.

<sup>325</sup> Google's Android One Platform About More Than Just Phones, *Trifis*, September 17, 2014, p. 1.

<sup>326</sup> Google's Android One Platform About More Than Just Phones, *Trifis*, September 17, 2014, p. 1.

<sup>327</sup> Google's Android One Platform About More Than Just Phones, *Trifis*, September 17, 2014, p. 1.

<sup>328</sup> Deposition of Hiroshi Lockheimer, December 8, 2015, pp. 138-139.

<sup>329</sup> Introduction to Android, May 2015, GOOG-00130338 – 386 at 377.

<sup>330</sup> 2015 Product Plan – Google Board of Directors, January 28, 2015, GOOG-00100312 –330 at327.



164. According to Mr. Jonathan Gold, Finance Director at Google, Google does not generate revenue from Android One.<sup>331</sup> However, according to Trefis, the launch of Android One was aimed to combat the pricing pressure on ads and slower growth in search queries that led to a slowdown in Google's revenue growth in 2014 by increasing the number of users on its Android platform, which would potentially increase search queries and sales of Apps in the Google Play store.<sup>332</sup>

### 8.3.2 Android Tablets

165. **Exhibit 9** summarizes annual worldwide Android smartphone and tablet unit sales. As **Exhibit 9** indicates, 489.6 million Android tablets have been sold worldwide since its introduction in 2010.

166. In June 2012, Google introduced its first Nexus tablet, the Nexus 7 manufactured by Asus.<sup>333</sup> In October 2012, just four months after the release of the Nexus 7, Asus announced that it was selling close to one million Nexus 7 tablets a month<sup>334</sup> and UBS estimated that there were approximately 5.4 million Nexus tablets shipped in 2012.<sup>335</sup> Based on estimates provided by UBS as of January 2014, the Nexus 7 tablet has “been the biggest contributor to Nexus-related revenues.”<sup>336</sup> Further, according to UBS, Google “disclosed in July 2013 that Nexus 7 tablets comprised 10% of all Android tablet activations up to that point.”<sup>337</sup> In December 2015, Google released the Pixel C tablet, the first Android tablet designed and built by Google to be a tablet-laptop hybrid.<sup>338</sup>

### 8.3.3 Android Wearables (Watches)

167. In June 2014, Google announced “Android Wear” with the LG G Watch, Samsung Gear Live smartwatches, and Moto 360. Android Wear seamlessly syncs apps between smartphones and smartwatches and vice versa.<sup>339</sup> Google recently indicated that manufacturers had created seven

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<sup>331</sup> Deposition of Jonathan Gold, December 11, 2015, pp. 210-211.

<sup>332</sup> Google’s Android One Platform About More Than Just Phones, *Trefis*, September 17, 2014, p. 2.; GOOG-00276658 – 675.

<sup>333</sup> <https://www.google.com/about/company/history/>;  
<http://www.theguardian.com/technology/2015/sep/29/pixel-c-first-wholly-google-made-tablet>.

<sup>334</sup> <http://www.cnet.com/news/asus-nexus-7-sales-climb-toward-1-million-a-month/>.

<sup>335</sup> Key Call: Google Inc. The Innovation Leader, *UBS*, January 6, 2014, p. 12.

<sup>336</sup> Key Call: Google Inc. The Innovation Leader, *UBS*, January 6, 2014, p. 12.

<sup>337</sup> Key Call: Google Inc. The Innovation Leader, *UBS*, January 6, 2014, p. 12.

<sup>338</sup> <https://googleblog.blogspot.com/2015/12/meet-pixel-c-our-take-on-tablet.html>; <https://pixel.google.com/pixel-c/>.

<sup>339</sup> <http://www.digitaltrends.com/mobile/android-wear-os-news-release-features/>.



different Android Wear watches with more than 1,500 different watch faces. According to J.P. Morgan, developers have created more than 4,000 Apps for Android Wear.<sup>340</sup>

168. According to a transcript of Alphabet's (Google) Q3 2015 earnings call, Android Wear works with both the Android OS and iOS, as well as with Android Auto, the Internet of Things platform Brillo, and Chrome.<sup>341</sup> As of December 2015, watches are the only type of Android Wear that is commercially available to consumers.<sup>342</sup>

#### 8.3.4 **Android Television**

169. In June 2014, Google announced Android TV, which as "the successor to the ill-fated Google TV, brings a new, streamlined user interface to TVs, game consoles, and set top boxes, designed to put content front and center. Android TV brings music, games, apps, movies, and TV shows alongside Android to your big screen."<sup>343</sup> Android TV manufacturers include Sony, Sharp, and TPVision.<sup>344</sup>

170. According to a June 2015 Jefferies report, Android TV is able to interact with any Android device, including Android Wear products.<sup>345</sup> Google plans to generate revenue from Android TV through revenue sharing arrangements with App developers and content creators, such as HBO, that the user purchases or subscribes to on his Android TV, as well as from ads displayed in Google apps, such as YouTube that are used on Android TV.<sup>346</sup>

#### 8.3.5 **Android Auto**

171. According to Google's website, "Android Auto automatically brings you useful information, and organizes it into simple cards that appear just when they're needed."<sup>347</sup> With Android Auto, people can use Google Maps, listen to music on Google Play, make voice calls and send and receive messages, and use a variety of Apps. The Hyundai Sonata was the first car to have Android Auto starting in May 2015.<sup>348</sup> As of September 2015, the Honda Civic/Accord and VW

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<sup>340</sup> J.P. Morgan Report, Google I/O 2015 Takeaways: Platform & Product Enhancements to Strengthen Google's Mobile Ecosystem, May, 29, 2015, p. 2.

<sup>341</sup> Thomson Reuters Streetevents Edited Transcript GOOGL – Q3 2015 Alphabet Inc Earnings Call, October 22, 2015, p. 6.

<sup>342</sup> Deposition of Hiroshi Lockheimer, dated December 8, 2015, p. 99.

<sup>343</sup> <http://www.androidcentral.com/android-tv-announcement>.

<sup>344</sup> <http://www.businessinsider.com/android-tv-launch-google-io-2014-6>.

<sup>345</sup> Google I/O: Google Focuses on Extending Android to TVs, Cars and Wearables, *Jefferies*, June 26, 2014, p. 1.

<sup>346</sup> Deposition of Hiroshi Lockheimer, December 8, 2015, pp. 72-73, 76.

<sup>347</sup> <https://www.android.com/auto/>.

<sup>348</sup> <http://www.androidcentral.com/some-hyundai-car-buyers-now-have-option-have-android-auto-installed>



Golf offered Android Auto.<sup>349</sup> Android Auto has gained support from the Open Automotive Alliance consisting of 50 car manufacturers ranging from Ford, Honda, Nissan, Maserati, Bentley and many more.<sup>350</sup>

#### 8.3.6 ARC Welder Runs Android Apps on Google's Chrome Operating System

172. Google announced the App Runtime for Chrome (“ARC”) project at the June 2014 I/O Developer Conference.<sup>351</sup> ARC allows Google to bring Android Apps to the Chrome operating system. This means Google is now using Android to occupy the original, traditional market of the Java Platform. In April 2015, Google released an ARC Welder Chrome app that allows a user to run Android Apps on Chrome OS or using the Chrome web browser.<sup>352</sup> ARC Welder allows developers to more easily test Android Apps.<sup>353</sup>

#### 8.3.7 Internet of Things / Brillo

173. In May 2015, Google announced its plan to create a platform like Android (“Brillo”) for the Internet of Things (“IOT”), a very popular concept of building a network of physical objects or “things” embedded with electronics, software, sensors, and network connectivity, which enables the objects to collect and exchange data. The IOT is “Brillo will allow for anything internet enabled, whether that be light bulbs, cars, TVs, or something else, to intercommunicate. Developers will be able to make simple Android apps that automatically inter-communicate with other Brillo based devices in the home.”<sup>354</sup> Mr. Hiroshi Lockheimer, a Google Senior Vice President, stated in his deposition “[t]here are a lot of hardware providers that are familiar with Android, so our idea was to take that broad support base for the Android kernel and drivers and so on and make it possible for folks who are familiar with that technology to also build devices in the IOT space.”<sup>355</sup>

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<sup>349</sup> <http://www.androidcentral.com/2016-honda-civic-introduces-support-android-auto>;  
<http://www.androidcentral.com/hondas-first-car-android-auto-will-be-2016-honda-accord>;  
<http://www.androidcentral.com/volkswagen-announces-android-auto-support-its-2016-lineup>;

<sup>350</sup> <http://9to5mac.com/2014/06/25/car-makers-will-offer-android-auto-alongside-carplay-later-this-year/>;  
 Deposition of Hiroshi Lockheimer, December 8, 2015, pp. 100-101, 106.

<sup>351</sup> <http://www.androidauthority.com/google-arc-welder-598170/>.

<sup>352</sup> <http://www.howtogeek.com/214734/how-to-use-googles-arc-welder-to-run-android-apps-in-chrome/>

<sup>353</sup> <http://www.howtogeek.com/214734/how-to-use-googles-arc-welder-to-run-android-apps-in-chrome/>

<sup>354</sup> <http://www.slashgear.com/brillo-is-googles-android-play-for-the-internet-of-things-28385621/>

<sup>355</sup> Deposition of Hiroshi Lockheimer, December 8, 2015, p. 69.

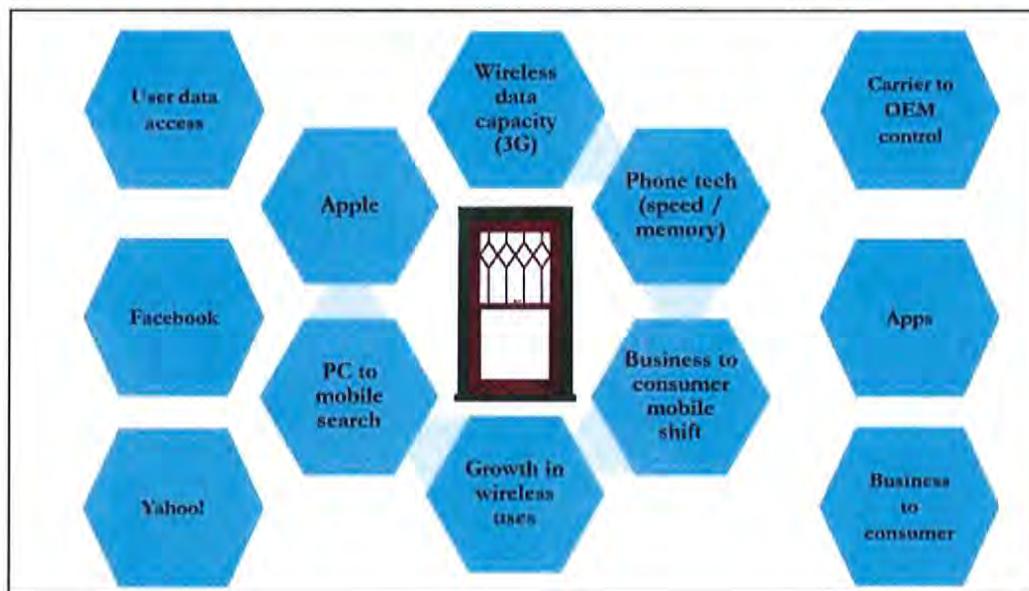


#### 8.4 Unique Window of Market Opportunity

174. As shown on **Figure 8**, the decade from 2002 to 2012 saw U.S. wireless penetration grow from under 50 percent to more than 100 percent.<sup>356</sup> As reflected in **Figure 9**, this growth was experienced in many countries around the world.<sup>357</sup> For potential purveyors of mobile operating systems like Sun, Apple and Google, this period represented a unique “Mobile Window” of opportunity. In 2006, Sun realized that it needed to release a smartphone product in a timely manner or “miss [the] market window.”<sup>358</sup> Google viewed the evolution from desktop to mobile search as a threat to its desktop search business as well as an opportunity. In 2010, Google specifically acknowledged the “mobile window” and recognized that the successful uptake of its mobile platform was critical to the survival of its business.<sup>359</sup>

175. **Figure 22** below identifies factors that shaped the mobile industry during the most critical period of the “Mobile Window,” at exactly the time the Android operating system was under development.

**Figure 22**  
Google Payments to Wireless Carrier Distribution Partners



<sup>356</sup> CTIA’s Wireless Industry Indices – Annual Wireless Survey Results: A Comprehensive Report from CTIA Analyzing the U.S. Wireless Industry – Year-End 2014 Results, CTIA-The Wireless Association, Sept. 2015, p. 31.

<sup>357</sup> **Figure 9.**

<sup>358</sup> OAGOOGLE0004936380 – 436 at 404.

<sup>359</sup> Trial Exhibit 370 – GOOGLE-23-0000049-057 at 049.



176. The transition from lower-functioning feature phones to higher functioning smartphones was driven in large part by the development of wireless technologies with greater bandwidth and also increasing hardware capabilities in mobile devices. For example, with the launch of wireless broadband services based on EV-DO or WCDMA/HSDPA technologies by most nationwide providers and some smaller regional providers, the number of subscribers increased from 3.1 million as of December 31, 2005 to more than 21 million in 2006.<sup>360</sup> Verizon Wireless introduced 4G LTE in 2010,<sup>361</sup> with download speeds four to five times faster than 3G networks, which rivaled some home broadband connections.<sup>362</sup>

177. Early wireless devices, from two-way pagers to early Palm One and Blackberry devices, were designed primarily for business use. However, the development of faster wireless technologies and the introduction by carriers of wireless data plans for individuals drove consumer demand for higher-functioning mobile devices. In response, “Mobile First” became a strategic cry for potential mobile operators and other competing firms within the Internet and mobile industries, including Google.<sup>363</sup>

178. Google was not alone in its recognition of the business opportunity. Google’s business records identify at least the following as competitors and “threats” to its objectives relating to the mobile market.

- **Microsoft:** Google identified Microsoft as a mobile competitor as early as 2005. In a Google Mobile Strategy presentation dated November 2005, Google notes that Microsoft announced that it had recently launched Live Search Mobile, which included mobile search services (Web, Local and Spaces).<sup>364</sup> A 2007 presentation entitled “Google Mobile Strategy to Win” indicates that Google viewed its mobile competition as “Getting More Aggressive.” The presentation reports that Windows Mobile 6 with “Windows Live Search” was recently launched in September 2006.<sup>365</sup> As of Q3 2008, Google viewed Window Mobile Devices with bundled Live Search, Maps and other services to be a “clear threat to our global business.”<sup>366</sup>

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<sup>360</sup> FCC 08-28, Annual Report and Analysis of Competitive Market Conditions with Respect to Commercial Mobile Services, Twelfth Report, February 4, 2008, p. 96.

<sup>361</sup> 4G LTE: Here and Abroad, Verizon News Center, June 27, 2013.

<sup>362</sup> What is 4G LTE and Why it Matters, Verizon News Center, April 30, 2012.

<sup>363</sup> “The Fatal Mistake that Doomed Blackberry,” Time.com, Technology & Media, September 24, 2013; <http://marketingland.com/what-google-mobile-first-rules-mean-for-your-marketing-strategy-126879>.

<sup>364</sup> GOOG-01-00017299 – 350 at344.

<sup>365</sup> GOOGLE-30-00101210 – 215 at213.

<sup>366</sup> GOOG-00360213 – 259 at 218.



- **Yahoo!**: According to a 2006 Mobile Strategy Presentation, Google viewed Yahoo! as a competitor. Google noted that Yahoo! Japan had recently launched a new mobile restrictive search, and announced plans to take its mobile ads “out for testing” by spring 2006.<sup>367</sup> Eric Schmidt provided a Strategy Update to the Google Board of Directors in 2006 which explained for “The Business We Are In.” “Microsoft and Yahoo! Are [sic] our primary competitors worldwide.”<sup>368</sup> A 2007 presentation entitled “Google Mobile Strategy to Win” indicates that Google was concerned with Yahoo!’s launch of Y!Go Version 2.0 in February 2007.<sup>369</sup>
- **Nokia**: Finland’s wireless penetration rates grew dramatically during this period and approached nearly 200% as of 2011,<sup>370</sup> providing a strong foundation for Nokia which Google considered a significant threat to become one of two dominant handset suppliers along with Apple. A Google Q3 2008 Mobile Narrative identifies Nokia as a Google competitor, “with 40% handset market share globally.”<sup>371</sup> Google viewed Nokia as a “[s]ignificant potential threat to our Local Search and Mobile Ads business.”<sup>372</sup> According to this presentation, “Nokia Maps is pre-installed on every S60 device (and many S40 devices starting next year); it could completely dwarf GMM’s installed base by a factor of 10 or more.”<sup>373</sup>
- **Apple**: Google also viewed Apple, Inc. as a major competitor in the mobile space, as well as a partner. Google was deeply concerned with its market entry behind Apple. Google was under intense pressure not to let Apple move too far ahead, and the two companies were pacing each other in the smartphone market.<sup>374</sup>

The race to get mobile devices to market is illustrated by the close proximity of the dates of Apple’s and Google’s introduction and launch of their respective mobile devices. Apple introduced the Apple iPhone on January 9, 2007. The iPhone was first offered for sale by AT&T on June 29, 2007. Google tried to keep pace. It introduced Android on November 5, 2007, and the first Android operated device was available for sale in November 2008. The close race between Google and Apple was not lost on the media.

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<sup>367</sup> GOOG-01-00017299 – 350 at 344.

<sup>368</sup> GOOGLE-26-0000005905-912 at 906.

<sup>369</sup> GOOGLE-30-00101210 – 215 at 214.

<sup>370</sup> Figure 9.

<sup>371</sup> GOOG-00360213 – 259 at 217.

<sup>372</sup> GOOG-00360213 – 259 at 217.

<sup>373</sup> GOOG-00360213 – 259 at 217. GMM stands for Google Maps for Mobile.

<sup>374</sup> “The Day Google Had to ‘Start Over’ on Android,” The Atlantic, December 18, 2013, [www.theatlantic.com](http://www.theatlantic.com); GOOGLE-26-00023709-728 at 714.



INTELLECTUAL CAPITAL EQUIITY

One article described Google as “gradually creeping out of the shadows to challenge Apple’s dominance of the mobile applications market.”<sup>375</sup>

On August 29, 2006, Google’s then CEO, Mr. Eric Schmidt, was elected to Apple’s Board of Directors which provided unique insight into the business strategies and objectives of Apple, Inc. However, Mr. Schmidt’s position on the board was later investigated by the Department of Justice for possible antitrust violations.<sup>376</sup>

- **Facebook:** Facebook in particular represented a large network of users and a corresponding unique and personal set of user data relevant to Internet search.<sup>377</sup> Had Facebook implemented Internet search into its social network platform, it may have had a significant impact on Google’s business, including its mobile search business. One June 2008 article described Facebook as the “Google of people.”<sup>378</sup> A memo sent to Google’s Board of Directors in October 2007 evidences Google’s fear about Facebook.

*In addition to allowing annotation from experts at the global level, we need to find ways for individuals to leverage the growing social graph of the web and our progress with apps to rank results based on trusted relationships within their social networks. Today, our Search strategy and our Apps strategy are separate architectural and product trajectories. The Facebook model has the property that it allows users to control identity at scale and in effect create an extended whitelist. If implemented properly this approach has the potential to threaten not only our applications products, but could ultimately evolve to produce a better search experience.<sup>379</sup>*

## 9. MONETARY RECOVERY FOR COPYRIGHT INFRINGEMENT

179. With respect to the measures of monetary recovery for copyright infringement,<sup>380</sup> 17 U.S.C. §504 – Remedies for Infringement: Damages and Profits – states, in part, that:

- “(a) In General. – Except as otherwise provided in this title, an infringer of copyright is liable for either –
  - (1) the copyright owner’s actual damages and any additional profits of the infringer, as provided by subsection (b); or
  - (2) Statutory damages, as provided by subsection (c).

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<sup>375</sup> GOOGLE-27-00002651 – 680 at 657.

<sup>376</sup> GOOGLE-5800021654 – 672 at 658.

<sup>377</sup> GOOGLE-26-00006162 – 6169, at 6163.

<sup>378</sup> GOOGLE-26-00004693 – 720 at 702.

<sup>379</sup> GOOGLE-26-00006162 – 6169, at 6163.

<sup>380</sup> See Section 12 below for a discussion of § 504(c) - Statutory Damages.



(b) Actual Damages and Profits. – The copyright owner is entitled to recover the actual damages suffered by him or her as a result of the infringement, and any profits of the infringer that are attributable to the infringement and are not taken into account in computing the actual damages. In establishing the infringer's profits, the copyright owner is required to present proof only of the infringer's gross revenue, and the infringer is required to prove his or her deductible expenses and the elements of profit attributable to factors other than the copyrighted work.

## 10. ORACLE'S ACTUAL DAMAGES

180. In connection with determining the amount of actual damage Oracle has suffered, I have applied a “but-for” test which quantifies a portion of the additional profit Oracle would have achieved absent Google’s infringement (i.e. Oracle’s lost profits). My quantification of Oracle’s lost profits is based on a comparison of the actual results generated by Oracle’s licensing of Java ME, relative to the results it would have been generated “but-for” Google’s infringement. To that point, I note that although Oracle continued to license Java ME following Google’s infringement of the Java Copyrights, it did so at a declining rate. Notably, consistent with my description of how I calculated lost profits, Sun’s hesitation to authorize Google to use an open-source implementation of the Java technology was, in part, out of fear that it would decrease other Java licensing revenue.<sup>381</sup> In the following sections, I provide my analysis of Oracle’s lost Java ME profits. The analysis is based on a quantification of Oracle’s lost revenues, incremental costs, and ultimately Oracle’s lost profits attributable to its lost Java ME licensing revenue.

### 10.1 Oracle's Java ME Lost Profits

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181. As discussed previously, Google tried unsuccessfully to negotiate a license to Sun’s Java technology, which included contemplation of an open source version of Java under an open source license, and one of Sun’s primary concerns during the failed negotiation was a substantial decline in Java ME licensing revenues.<sup>382</sup> Although Google was aware of this risk to Sun, and therefore understood that compensation under the license would need to account for any such lost licensing revenues, the failure to reach an agreement has resulted in Sun/Oracle having suffered losses for which it has not been compensated. The parties’ awareness of the negative impact an open source mobile Java platform not controlled by Sun would have on Sun’s licensing business is illustrated by the following bullet points:

- Internal correspondence from Tim Lindholm to Mr. Rubin discussing the compensation to Sun states: “for the risk of its loss...the price would be high” as

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<sup>381</sup> GOOGLE-01-00017143 – 144 at 143.

<sup>382</sup> GOOGLE-01-00019527-528 at 527-528. Deposition of Jeet Kaul, August 5, 2011, at p. 106. GOOGLE-12-00044903; GOOGLE-01-00017143-144 at 143.